

I claim:

1. A thin film piezoelectric resonator, comprising:

a lower electrode layer and an upper electrode layer;

a piezoelectric layer between said lower electrode layer and said upper electrode layer;

an additional layer disposed on said upper electrode layer, said additional layer having a structure setting a prescribed resonant frequency of the piezoelectric resonator.

2. The resonator according to claim 1, wherein said structure in said additional layer is defined by holes, and wherein a spacing between each one of said holes and a respectively closest hole is smaller than a wavelength of an operating wavelength of the resonator.

3. The resonator according to claim 1, wherein said structure in said additional layer is defined by islands, and wherein a spacing between each one of said islands and a respectively closest island is smaller than a wavelength of an operating wavelength of the resonator.

4. The resonator according to claim 1, wherein said structure is so irregular that diffraction phenomena are avoided.

5. The resonator according to claim 1, wherein said piezoelectric layer is formed of a material selected from the group consisting of AlN, ZnO, and PZT ceramic.

6. The resonator according to claim 5, which further comprises a carrier film formed of polysilicon formed below said lower electrode layer, said piezoelectric layer, and said upper electrode layer, and wherein a cavity is formed on a side of said carrier film averted from said lower electrode layer.

7. A piezoelectric resonator assembly, comprising a plurality of thin film piezoelectric resonators according to claim 1 formed on a common chip, said resonators being set to at least three different resonant frequencies.